



# AMERICAN RAILROAD JOURNAL, AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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PROPRIETORS.*

SATURDAY, FEBRUARY 4, 1837.

[VOLUME VI.—No. 5.]

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## AMERICAN RAILROAD JOURNAL.

NEW-YORK, FEBRUARY 4, 1837.

### TO CIVIL ENGINEERS, &c.

E. & G. W. BLUNT, 154 Water st., corner of Maiden Lane, have recently received an assortment of LEVELS, from different manufacturers, among others from Troughon & Surins, which they warrant of the first quality. Circumferentors, Levelling Staves, Prismatic Compasses, Mathematical Instruments, Books for Engineers, etc., constantly on hand.

One of the above firm is now in England superintending the manufacture of Theodolites, Transit Instruments, etc.—and any orders for Instruments, not now on hand, will be forwarded him, and executed promptly.

### LIST OF SUBSCRIBERS to the Railroad Journal, that have paid, (continued.)

J. B. Jervis, City, N. Y.,	Jan. 1, 1838.
J. L. Shoemaker, " "	1838.
J. Strunk, jr. Olean Pt. N. Y.,	" 1838.
I. M. Sherwood, Auburn,	" Sept. 1, 1837.
Moses Long, Rochester,	" 13, 1837.
V. R. Many, Albany,	" Feb. 13, 1837.
H. Bostwick,	" Jan. 1, 1837.
C. C. Dennis,	" " 1838.
J. B. Moulton, Courtland,	" " 1837.
C. Bishop, Homer,	" " 1837.
H. Wilder, Boston, Mass.,	" 1838.

the latter, on new and curious combinations in essential oils.

Several Zoological notices by Dr. Haxton are also of high merit.

**HIWASSEE RAILROAD.**—The corps of Engineers employed to survey the route for the Hiwassee Railroad have arrived, and will enter forthwith upon the survey and location of the road. We have conversed with Mr. Trautwine, Principal Engineer, and he gives it as his decided opinion that the part of the route he has seen, from Knoxville to this place, is equal, and some portions of it the best route for the location of a Railroad he has ever seen. The company are determined to commence the work immediately, and continue it until it is completed.

On last Monday the Stockholders elected the following named gentlemen Directors, viz:—Gen. S. D. Jacobs, Hon. C. F. Keith, Maj. Thos. Brown, Col. O. G. Marrell, Jacob Pearson, John H. Crozier, James H. Fyffe, T. N. Van Dyke, and A. D. Keys, Esqrs.

On the same day the Board of Directors met and elected Gen. S. D. Jacobs President, and A. M. Coffey, Esq. Secretary and Treasurer.—[Tenn. Jour.]

**JOURNAL OF THE AMERICAN INSTITUTE,**  
Jan., 1837.—This Journal again makes its appearance in the usual neatness of execution, and value of material. Several articles in it are of particular interest.

**AMERICAN JOURNAL OF SCIENCE AND ARTS,** Jan., 1837.—A valuable number of this work so creditable to American Science. A memoir of the Rev. Dr. Prince, of Salem, and several contributions from gentlemen of talents, will interest the general reader.

The articles of Dr. Feuchtwanger, and also those of Dr. Hare, are well worth the attention of the chemical reader, particularly

**WATERTOWN AND CAPE VINCENT RAILROAD.**—The books for subscription to this work were opened on the line of the route during the three first days of last week—and the Stock is entirely taken up with the exception of about fifteen thousand dollars; two-thirds of this sum is already engaged.

**AUBURN AND ROCHESTER RAILROAD.**—We see in the Seneca Falls Farmer, (in a statement derived doubtless from the Secretary of the Board who resides in that village,) that upwards of \$1,035,000 have been subscribed to the stock of the A & R. Railroad Company.

**AUBURN AND GREAT SODUS BAY RAILROAD.**—The Auburn Journal of the 11th inst. says that “a petition had been for a day or two in circulation for the incorporation of a company, with a capital of \$400,000, for the purpose of constructing a Railroad from that village to Sodus. Another Railroad to connect Auburn with Ithaca, is projected, and measures are on foot to carry forward both enterprises.

The Belfast and Quebec Railroad is receiving the attention of the people of Maine. They are recommending to the consideration of the Legislature, now in session.

We are indebted to the N. Y. Times for the following account of the Great Railroad Meeting, held on the 20th January last, in this city.

We exceedingly regret that other engagements prevented us from attending, as we understand the proceedings were of a nature highly gratifying to the friends of internal improvement in general, and of this enterprise in particular.

It will be seen that the Company have already been offered for the lands in their possession, and chiefly given to them, the annual payment of 6 per cent. upon such instalments as may be payed in. The Company of course have no desire to part with lands so valuable to them on the completion of this work.

There is no doubt, if we can form an opinion from the spirit manifested on the subject, but that the necessary subscriptions will immediately be made.

#### PUBLIC MEETING ON THE SUBJECT OF THE NEW-YORK AND ERIE RAILROAD.

Pursuant to a call signed by a large number of the merchants, mechanics and land-owners of the city of New-York, a very numerous and respectable meeting assembled on the evening of the 20th of January, 1837, at Clinton Hall.

The meeting was called to order by Mr. JAMES N. WELLS, on whose motion, His Honor the Mayor, was unanimously chosen President; and JAMES N. WELLS and NATHANIEL WEED, were appointed Vice Presidents; and THOMAS R. MERCEIN and WILLIAM SAMUEL JOHNSON, Secretaries.

The Mayor on taking the chair, announced the object of the meeting to be, as stated in the call, “to receive from the Board of Directors of the New-York and Erie Railroad Company, important statements respecting the progress of their undertaking, and its improved financial condition, and to adopt measures for an energetic prosecution and early completion of the work.”

At the request of Mr. JAMES G. KING, the President of the Railroad Company, Mr. Johnson read a portion of the Report heretofore made to the Common Council of this city, by a joint Committee, of which Mr. J. was the Chairman, setting forth the immense importance of the work to this city, in all its branches of industry. Which be-

ing done, Mr. King proceeded to make a statement of all that the company had hitherto done, and of the circumstances—first of the desolating fire of December last, and then of the recent money pressure—(which he remarked incidentally, he thought he might congratulate his audience upon having now passed,) by reason of which they had not before called upon their fellow citizens to fill up the stock. The time, however, had not come for action, vigorous, prompt, and sustained, if we were in earnest in the purpose of opening this new avenue—available at all seasons—to the West.—That to produce such action was the object of inviting this meeting, and to the end that none might act without full knowledge.—

Mr. K. proceeded to state the grounds upon which—after personal inspection by some of their body—and the most careful examinations and re-examinations by Engineers second to none in their profession—the Board of Directors were willing to stake their characters for intelligence and sound judgment, upon the practicability, and the certain and positive benefits, of the projected road—which, if reliance could be placed upon most careful estimates by cautious men—and he knew no better ground of reliance in any such undertaking—could be made for *six millions of dollars*. Of this amount there were now subscribed and paid in to the extent called for, *one million eight hundred thousand dollars*,—the State was pledged for *two millions more* on the completion of a single track for the whole route, and the city of New-York was asked to make the sum up to *five millions*—confident that before that should be expended, the benefits of the road would be so manifest, and the rise in value of property along its route so great, that no difficulty would occur in obtaining the remaining million. *One million two hundred thousand dollars* then was all that was asked from this city—so as to make up the private subscriptions to *three millions*.

Mr. K. here added that great and honorable exertions were made, to secure the passage of the law, granting the credit of State—

on the floor of the *Assembly*, by General Prosper M. Wetmore, and his colleagues, Messrs. Cowdrey, Sharp, Conner, and West, of the city delegation; and in the *Senate*, by Messrs. Livingston and Van Schaick—to each and all of whom, the thanks of their fellow citizens were most justly due. In addition to the motives of patriotism, of pride, of self-interest, which combine to prompt New-York to accomplish this great work, Mr. K. stated, that donations had been made to the Company along the line of the road west of the Genesee river, of so great value, as to enable them to offer to those who were, and those who might become, subscribers to the stock, *six per cent. per annum*—(to be provided by the sales, as needed, of these lands,)—upon all sums called in till 1841, with the further proviso, that the residue of the lands then unsold should be rateably divided among the then holders of the three millions of stock. As an evidence even now of the worth of these lands, the Secretary, at Mr. K.’s instance, read an offer to the Company, signed by G. Hoyt, C. Hoyt, N. Devereux, and

Nevins & Townsend—of *four hundred thousand dollars* for these lands, to be paid in such sums, on the 1st of July of each year until 1841, as should suffice for the interest, at 6 per cent., accruing at these periods on the instalments of stock paid up. Mr. K. added, however, that there was no intention, on the part of the Company, to accept this offer, preferring to reserve for their stockholders the rise in the value of these lands which the progress of the road could not fail to occasion, selling only from time to time what might be needful to meet the payment of dividends. Finally, whatever sums were now subscribed, would only be called in, in instalments amounting to 25 per cent. per annum, for four years; and the first payment of  $12\frac{1}{2}$  per cent. might be made in notes at three or four months.

As to the revenue of the road, when completed and in full operation, Mr. K. observed, that after a strict and careful examination, by his associates and himself, they could not entertain a reasonable doubt of such results, from the profits of transportation of passengers and merchandise, as to render the stock of the highest value in point of security and of dividends. Indeed, that it was impossible to come to any other conclusion, when they considered the cheapness of construction, the general facilities of the grades, the various tributary railroads and canals, the outlet upon the western lakes, the early navigation of the Alleghany river, and the enterprise of the increasing population of the thrifty towns, villages and settlements, along the whole length of the road, rendered doubly prosperous by the outlay among them of so many millions.

Mr. K. claimed particular attention to the fact, that his associates and himself had no motive, beyond what every other stockholder possessed, in the value of the stock. They had no separate pecuniary interest, to mislead their judgment—they owned no lands or property adjoining the road—not within the Southern counties—and they put forward their claims to public confidence, upon the ground of their entire disinterestedness.

Mr. K. concluded by stating that he had never known inducements of a pecuniary character held out for co-operation in an enterprise promising such vast results, stronger than those which he had been able, in behalf of his colleagues and himself, to present to this meeting; but so deeply did he feel the importance of the cause, that in addition, he would invoke the patriotism, never found wanting, of the merchants, traders, professional men, mechanics and other industrious classes of this powerful city. He would appeal to their enlightened spirit of enterprise, which could discern, and aim at, distant benefits; and to that just regard to their own interests, which would not permit them to stand idle, while a rival city and State are straining every nerve to carry off, before their eyes, the precious trade of the great West—not to suffer this mighty work, confided to his associates and himself, to languish, perhaps to perish, for the want of adequate protection.

Mr. John A. Stevens followed Mr. K. and said that he stood before that meeting

a recent convert; that until very lately he had entertained strong doubts of the practicability and usefulness of the work—but that after a careful and minute examination, he had become fully convinced, that what on a loose and general view had seemed to him visionary, was in truth most practicable—most desirable—and would be most clearly profitable, not only to the public, but to those who might invest their funds in the work. He had no interest in the question beyond that of every one of his fellow citizens—had no lands along the route—and up to that time had not even subscribed to the stock: but his attention having recently been invited to the subject, and entertaining, as he did, a strong belief that the sagacious and experienced individuals, who were associated in the Board of Directors, must have well informed themselves as to the character of the work, and the resources on which they relied for revenue, he had spent some time in examining, as thoroughly as had been in his power, the details of the enterprise. He had carefully read the reports of the engineers, and abler or clearer statements he was sure were no where to be found—had examined the profiles and grades, and compared them with those of other roads in successful operation—had sifted the *data* as to probable expenditures and revenue, and that he had come deliberately to the conclusion, that the work was feasible—that it would furnish the means of cheap and rapid transportation—that its tolls, when completed, would afford to the stockholders a profitable revenue—that the auxiliary resources on which the Directors relied for dividends, while the work was in progress, were of great value and importance—and that it was incumbent on the citizens of New-York at once to urge it on to its completion.

Deeming it probable that there might be in that meeting many like myself, who had imbibed erroneous impressions as to the true character of the work, he thought it useful to enter into detail, and put his friends in possession of most of the *data*, which had induced the change of his own opinions on this subject.

Mr. S. proceeded accordingly to describe, with accuracy, and clearness the various acclivities and curvatures of the road—the total absence, throughout the whole line, of inclined planes—the favorable contrast, in those respects, with the Pennsylvania and the Baltimore and Ohio Railroads—and concluded by declaring his firm conviction, derived from close examination of the proofs, that locomotive engines, drawing heavy loads, as well of merchandise and agricultural products, as of passengers, could profitably traverse the whole route from the Hudson to the Lake.

In the course of his remarks on this subject, Mr. S. stated the striking and conclusive fact, that, although the route passes over, or rather winds through an uneven country in a portion of its line, yet that the greatest acclivity which it encounters at any point, *will not be steeper than the present grade of the Harlem Railroad, in the Bowery, in this city, opposite Vauxhall*, and

that the greatest portion of the whole line, has not more than one half of that degree of inclination—and he appealed to his fellow citizens, who daily witnessed the rapid passage along that street, of loaded vehicles drawn by horses, to point out what difficulty could exist in passing over grades of less severity with locomotive engines.

Mr. S. proceeded to point out the importance of securing a connexion in the early spring, between the port of New-York and the populous valleys of the Ohio and Mississippi, and called the attention of the meeting to the fact, which he deemed all important, that the head of navigation of those rivers, forming the commercial key of that whole region of territory, actually lay *within the limits of this State*, in the county of Cattaraugus, and on the very line of the proposed road. He was confident, he said, judging, from his own want of acquaintance until a very recent period with that important feature in the enterprise, that his fellow citizens were not thoroughly aware of the capacity and value of that stream. He read to the meeting a very interesting letter on the subject, from Judge Chamberlain, of Cattaraugus County, which had been printed under the direction of the Senate of this State, while the loan law was under consideration, and he showed from the facts therein set forth, that when the railroad shall be completed from the Hudson to that river, the merchandize of this city can be sent down into the valley of the Ohio, before the 10th of March, earlier even than the opening of the Pennsylvania Canal, and nearly six weeks before the opening of the Erie Canal.

Mr. S. added, that he was fully satisfied, from the general character of the country, and of the grades of the road, that it could be cheaply constructed and profitably used—that the large population which it would accommodate, and which is now rapidly increasing, would afford a lucrative revenue in the transportation both of persons and property; and that such revenue would steadily increase with the growth of the country and the development of its resources.

In conclusion, Mr. S. described the struggle which is now exhibited of four important Atlantic States:—*Virginia*, through the James River and Kanawha Canals and Railroad—*Maryland*, by the Baltimore and Ohio Railroad—*Pennsylvania*, by her Railroads and Canals; and, lastly, *New-York*, with the proposed Railroad, all striving to win the rich prize of the Western trade.—And he earnestly appealed to his fellow citizens to come forward at once, and by all the means in their power, to hasten the completion of a work in which their commercial ascendancy and permanent prosperity were so deeply involved.

He, therefore, submitted the following resolution, which was passed unanimously:

*Resolved*, That the early completion of the New-York and Erie Railroad is, in the opinion of this meeting, an object of the highest importance, both to the local interests of this city, and to its commerce with the interior; and that this meeting entertains the fullest confidence in the feasibility

of the undertaking—in the resources relied on for annual dividends while the work is in progress—and in the security and value of the stock when the road shall be in operation.

Mr. George Griswold succeeded Mr. Stevens.

Mr. G. said, that the time had come when it was necessary for the citizens of New-York to determine whether a work, such as they had heard described, and of which the importance to our prosperity could not be overrated, should be urged on to rapid completion, or suffered to languish and die—this was the question, and on the decision of this meeting it depended, whether the enterprise should succeed or fail. He could not doubt the result of the appeal that had been made. Pride, patriotism, self-interest, all combined to induce us to proceed. Already Pennsylvania, by a railroad in progress to Erie, on the Lake, is aiming to strike the very point we are tending to; and shall we sit still and let a rival—an honorable and emulous rival indeed—take from us the prize. Nature, art, enterprise, and skill had given us the ascendancy: a harbor, to which the world presented no superior—approachable at all times—that is, added Mr. G.—when pilots are to be found—the finest ships in the world, the best sailors, as he verily believed, and vast enterprise, gave us the lead, and that lead nothing could take away from us, if we were only alive to our true interests. The work under consideration appealed to all those interests—to the merchant, to the householder, to the professional man, to the ship builder,—hail, there was not a cartman, sailor, rigger, or laborer connected with the city, who would not be more or less benefitted, either in the increase of work, the augmentation in the value of property, or the extension of business, by this new opening to the far West. And to insure these most desirable results what was asked? A subscription payable in equal parts in four years, of twelve hundred thousand dollars! not four dollars a head for our population—not one dollar a head annually for four years! Can there be a doubt that this trifling, this very trifling compared with the resources and means of the city, would be forthcoming?

Mr. G. concluded by saying, that as evidence he did not recommend to others what he was not prepared to aid in himself, he would state that, in behalf of himself and some friends with whom he had consulted, if one million were subscribed by the citizens at large *he would take the remaining two hundred thousand dollars!* He believed it would be an excellent investment.

He, therefore, submitted the following resolution, which was unanimously adopted:

*Resolved*, That in view of the rival enterprises of other States, this community is loudly called on to sustain the efforts necessary to a vigorous prosecution and rapid accomplishment of this undertaking, by means of which the earliest and most speedy communication will be established between this city and the vast and various markets in the valleys of the Ohio and

Mississippi, and on the borders of the western and north-western Lakes.

On motion of Mr. Robert Chesebrough, it was unanimously

*Resolved*, That the entire population of this city, from the poorest to the most prosperous—laborers, mechanics and manufacturers, as well as merchants, land owners and professional men—are alike deeply interested in the completion of this work, as a medium of constant and abundant supplies from the remote interior, of provisions, fuel, lumber and other articles of consumption, at all times, and especially during the winter months,—since by such supplies, renewed from day to day, the expenses of living will be materially diminished, and the health, comfort and prosperity of all classes of citizens essentially promoted.

It being announced to the meeting, that Mr. Ogden now of the State of Illinois, and lately of Delaware county, in this State, was present, and that he had actively advocated the Loan Law, as a member of Assembly from that county, in the session of 1835.

Mr. O., on the call of the meeting, made a brief exposition of the nature and extent of the products which the Southern counties would afford for transportation on the proposed road, and particularly of the valuable lumber which was now exported from that section of the State, throughout the whole valley of the Mississippi.

He proceeded further to advert to the rapid improvement now taking place throughout the whole of the west, particularly in constructing railroads destined to be tributary to the one under consideration, and to extend the line of communication into the remotest portions of those fertile and rapidly peopling regions of the interior, all of whom, said Mr. O., are looking, with eager eyes, to the New-York and Erie Railroad, and prepared to meet it at least half way, and extend to its projectors and supporters the right hand of fellowship.

General Tallmadge felt quite sure that the wants of the Company would be immediately met, for he placed the fullest reliance upon the statements which had been made, and upon the ability of this city to afford the requisite aid; and he was, moreover, well acquainted with the value of the Southern tier of counties. He would remind the meeting of events of which he himself was a witness. When the State of New-York made application to the General Government for assistance in carrying out her schemes of improvement, they appeared so vast even to the mind of President Jefferson, that he pronounced them to be "*a hundred years in advance of the times*."—That application, and the refusal, on account of its character being deemed so chimerical, did actually prostrate the credit of this State, and postpone the accomplishment of her great designs, until taking courage, and relying upon her own energies, New-York unaided, carried into vigorous execution her great system of Internal Improvement—elevating her credit to the highest point abroad and at home,—and reaping a full measure of glory and prosperity. Similar results, said Gen. T., will assuredly follow, if the New-York and Erie Railroad shall now be sustained by those to whom the appeal is made—and thus another

will be added to the bright examples, of what may be accomplished by a people blessed with a healthful and fertile soil—and with their faculties developed and strengthened by general education, and by free political institutions. He would therefore move the following resolution, which was unanimously adopted.

*Resolved*, That it is expedient to adopt measures without delay, to increase the available subscriptions to the stock of the New-York and Erie Railroad Company to three millions of dollars,—that a committee of thirty-five citizens, with power to add to their number, be appointed by the chair, to obtain subscriptions,—and that it be recommended to the Board of Directors forthwith to open books for that purpose, at the Merchants' Exchange, and at such other places as they shall deem expedient.

The following gentlemen were then nominated by his Honor the Mayor:—

John Haggerty,	John A. Stevens,
Robert Chesebrough,	Moses H. Grinnell,
Samuel S. Howland,	James N. Wells,
Chas. N. Talbot,	Moses Taylor,
Benj. Birdsall,	Nath'l. Weed,
Frederick Sheldon,	E. S. Gould,
Stephen Allen,	Simeon Draper, Jr.
Charles Kelsey,	Abm. G. Thompson,
Thomas R. Mercein,	David Austin,
Daniel Jackson,	D. W. Wetmore,
Shepherd Knapp,	Samuel Jones,
Robert Ray,	George W. Bruen,
James B. Murray,	Thomas E. Davis,
Charles Hoyt,	J. A. Perry,
Ogden E. Edwards,	Christopher Wolfe,
Henry H. Elliott,	David Lee,
Edward G. Faile,	Charles Denison,
Alfred R. Mount,	Jacob Lorillard,
Martin E. Thompson,	Philetus H. Woodruff,
And Andrew Lockwood,	

It was therefore Resolved, that the proceedings of this meeting be published, and the meeting adjourned.

C. W. LAWRENCE, President.

JAMES N. WELLS, Vice-Presidents.

NATH'L. WEED,

THOMAS R. MERCEIN, Secretaries.

Wm. SAM'L. JOHNSON,

We feel proud in being able to lay before our readers this Report in relation to the affairs of a Company, that in all its arrangements financial and professional, may fearlessly challenge competition.

In New-York we feel additional interest in a work of so much importance to our city. May it go on as prosperously as it has commenced.

REPORT OF THE COMMITTEE OF THE LEGISLATURE, APPOINTED TO EXAMINE INTO THE CONDITION, AFFAIRS, REVENUE, AND FUTURE PROSPECTS, OF THE NEW-JERSEY RAILROAD AND TRANSPORTATION COMPANY.

MR. WILLIS, from the Joint Committee, made the following Report to the House of Assembly.

The Joint Committee of Council and Assembly who were charged by a resolution passed at the last sitting of the Legislature with the "duty of examining and investigating the condition and affairs of the New-

Jersey Railroad and Transportation Company, the expenditures they have made on their work, the probable amount necessary for its completion, with the revenue now receiving by the Company, and all such other facts as may aid the Legislature in deciding upon the subscription to the capital stock of the Company, reserved by the charter, according to the best interests of the State," beg leave to report:

That they have during the late recess visited and examined the works and property of the Company, and made a minute and careful investigation of their books of accounts and papers necessary for the full understanding of the various matters required by the foregoing resolution, and have unanimously agreed in submitting the following highly satisfactory statement of the result of their examination, which, in order to be as plain and intelligible as possible, exhibits each subject investigated by the Committee in detail.

### 1. Condition of the Work.

The work is fully completed with a single line of rails, and an adequate number of turnouts, from the Raritan to the Passaic rivers, (a distance of 22½ miles) upon the most approved mode of structure, with heavy upright iron rails; on the whole of this distance, a locomotive engine has been used since the middle of last July, making three trips a day.

From the Passaic to the Hudson river, (a distance of about 8 miles,) the road is but partially finished. A single line of rails, however, has been laid on the permanent route of this portion of the work, from the Passaic to near the Hackensac river, and a double track about one mile east of the Hudson, and a temporary track on the intervening portion, viz. the Hackensac Bridge and Bergen Hill. Over the whole of this distance, cars have been used with horse-power, since September 15th, 1834, making a trip each way every hour and a half during the day, besides a night line of three trips.

Throughout the whole route, the grade of the road is no where to exceed 26 feet to the mile, as will be seen by reference to the map and profile accompanying this Report, it being understood that the entire distance between New-York and Philadelphia will admit of a railroad construction of this low graduation.

The parts which are incomplete are the Dock and place for depot at Jersey City, the deep cutting at Bergen Hill, the abutments of the Hackensac Bridge, the Bridge or Viaduct over the Raritan, and the extension of the road three miles south of Raritan to the point of its termination. The work at these several points is now in progress, with the prospect of being completed within one year. The cost of the unfinished portions, with the additional fixtures, and the right of way not yet obtained, is estimated by the chief Engineer, L. A. Sykes, at \$300,416, as per paper marked A.

### 2. Available Means of the Company.

The Capital Stock subscribed and actually paid in, is \$1,125,000, being  $\frac{1}{4}$  of the whole capital. The remaining  $\frac{3}{4}$  of the capital, amounting to \$375,000 (the privilege of subscribing to which being reserved to the

State, and of course not available,) the Company, in order to proceed with the work without delay or interruption, have temporarily borrowed the sum of \$158,082.14.

*Surplus lands*, which from motives of policy, or the necessity of the case, the Company have purchased in connexion with the right of way, and which are disposable by the Company, are estimated to be worth at least \$100,000.

*Debts* due the Company and cash on hand, exclusive of the transportation account \$18,757.88.

In addition to the above, the Company have purchased and hold, agreeably to the authority and requirements of the 10th section of the charter, stocks of other companies, as follows, viz.

Of the united Hackensack and Passaic Bridge Company, \$113,759 19
The Newark Turnpike Company, 25,780 58
New Brunswick Bridge Company, 34,920 00
Essex and Middlesex Turnpike Company, 18,192 33

\$192,652 10

Locomotive engines, cars and horses, which at a depreciation of from 8 to 25 per cent. on the cost, are estimated worth

\$64,542 46

*Wood* on hand, 3,000

#### 3. Total Expenditures, exclusive of the Transportation Account.

Cost of the construction of the road, Bridges Viaducts &c \$860,335 35

Location and purchase of lands, and right of way, 222,606 42

Locomotive Engines, 25,042 46

Cars, 38,105 72

Cost of Horses, 13,189 73

“ Wood, 7,185 31

Expended for Stocks in other Cost referred to above,

In rebuilding a bridge for the Hackensack and Passaic Co. For repairs of Newark Turnpike,

Loans and debts now due to the Company,

Expended on Interest account and Dividends on account of School Fund Stock,

1,407 98

#### 4. Revenue and Future Prospects.

The nett receipts for transportation, from Sept. 15, 1834, when the cars commenced running, to June 1, 1835, a period of 8 $\frac{1}{2}$  months, are

\$18,306 71

To which add the gross amount of receipts since June 1, 1835, viz.

169,447 55

Making total \$187,754 26

From which deduct the whole amount charged to transportation account within the same period, and which has been greatly enhanced in consequence of the temporary track over Bergen Hill, requiring the use of horse-power, viz.

\$81,435 04

Also the whole amount of Dividends, which have been declared on and after July 1, 1835, and which have been uniformly at the rate of

6 per cent. per annum on the capital stock paid in, viz.

47,315 00

\$128,750 04

Leaving a balance in favor of the receipts on transportation account up to Dec. 1, 1836, which is applicable to the payment of Dividends and incidental expenses, of \$59,004.22.

An estimate of the continual increase of revenue from transportation; and of the future prospects of the Company, may be made from the annexed statement (marked B) showing the number of passengers for each month since June 1st, 1835—and also from the close of the paper (marked C) showing the gross amount of receipts for transportation for three successive periods of six months each.

In addition to which a farther increase of revenue may be anticipated from the completion of the following tributary roads, viz: “The Morris and Essex railroad,” four miles of which are finished and in use, the passengers of which are now carried between Newark and Jersey City, in the cars of the New-Jersey company, by an arrangement between the respective parties. “The Somerville railroad,” which is in a course of construction, and intersects the New-Jersey railroad at Elizabethtown:—and the continuous line of railroad across the State, which will be effected when the Branch railroad from New-Brunswick to the Camden and Amboy railroad, authorized and required by a supplement to the charter of the latter company is completed; for the speedy accomplishment of which work, so beneficial to the State and to the whole community, definite arrangements have been made by the respective companies interested; each being bound to carry each other's passengers in a commodious and expeditious manner; and the receipts to be divided between them in a pro rata proportion; each party, however, preserving its distinct and separate interests, as satisfactorily appears from an examination of the contract.

It is to be recollected, that the revenue hitherto received, has been derived principally from the transportation of passengers; and that the amount must be greatly enhanced, as well as the expense greatly diminished, when the cut through Bergen Hill is completed, so as to admit of the application of steam power to the transit of merchandise.

The sum of \$59,004.22, which stands on the books of the company, to the credit of the transportation account, and which is stated above to be applicable to the payment of Dividends, has been borrowed by the construction account, that is to say, the company have expended the same in carrying forward the work. It is, however, understood to be the intention of the Board of Directors to replace this sum; and it is yet an undecided question whether to refund a sufficient amount to meet the next regular semi-annual dividends, or to postpone the payment of said dividends, until the company are in funds, from the disposal of the reserved capital stock; a question, which in the opinion of your committee

justly entitles them, to the prompt decision of the legislature.

#### 5. Miscellaneous Facts.

A contract has been made with the “Paterson Railroad Company,” which is to continue during the charters of the respective companies; by which is received a transit duty of 6 cents per passenger and 12 cents per ton of merchandise transported over the New-Jersey road from the junction near Bergen Hill to Jersey City.

The State of New-Jersey has merged the amount of its stock in the “Newark Turnpike Company,” viz: \$12,500 in the stock of this company, for which the State holds a guarantee of a minimum dividend of 8 per cent. per annum.

The sum of \$192,652.10 invested in the stocks of the several bridges and turnpike companies referred to in the preceding part of this report, yield a revenue of between 6 and 7 per cent. per annum on the cost.—And notwithstanding a reduction of tolls of about 33 $\frac{1}{2}$  per cent.; and notwithstanding the diversion of travel by the railroad and by steamboat between Newark and New-York, the amount of revenue from these sources has increased, and is continually increasing.

In conclusion it is but just to add, that all the financial operations of the company, have been based upon cash payments, and are copiously and clearly exhibited in the books of accounts and vouchers. That notwithstanding the magnitude and the difficulties of the work, it has been advanced to its present state, with as little delay as could have been reasonably expected; affording just ground of confidence in the determination of the Board of Directors to bring it to its final completion in the short period of a twelve-month; and although numerous and heavy contracts have been made with different individuals, no losses have been sustained by the company, with the exception of a single instance, in which the securities held, are perhaps of a dubious character, amounting to \$1,260.09.

By way of recapitulation, annexed to this report are two balance sheets (marked C and D) prepared by the Treasurer of the company, of the correctness of which your committee have satisfactory evidence, from an examination of the books and papers, which exhibit a summary view of the condition and affairs of the corporation, up to December 1st, 1836.

The committee do not at this time present any bill for the specific action of the legislature. They consider it, however, proper to state, that the Company have placed in their hands two resolutions expressive of their wishes on so much of the subject as they refer to, which resolutions are annexed to this report, and marked E. By the first of these, it will be perceived that in order to make the reserved stock of the company available for the progress of their work to its completion, they request of the legislature as speedy a decision upon the question of subscription as practicable, in order that individual subscriptions may be obtained without delay, should the State conclude to waive her right; a request

which your committee conceive to be reasonable, and do therefore recommend the early action of the legislature upon the subject. The other resolution offers to guarantee to the State on stock to the amount of two hundred thousand dollars, dividends at the rate of at least five per cent. per annum; or on one hundred thousand dollars, dividends at the rate of at least six per cent. per annum, and such further and larger dividends as shall be declared by the company: and they also agree to refund to the State the aforesaid sums respectively, and retake the stock if the State should subscribe either amount, whenever repayment of the monies received by New-Jersey under the Deposite Act, shall be required by the General Government.

The committee therefore, submit to the legislature the foregoing facts, as the result of their labors under the resolution by which they were created; and they deem it incumbent on themselves to say, that in their examinations, investigations, and whole intercourse with the company, the committee have been furnished with every facility for the full and faithful discharge of their trust. All which is respectfully submitted.

THOMAS ARROWSMITH, Committee  
J. C. SMALLWOOD, } of Council.  
M. WILLS, }  
ELIAS P. SEELEY, } Committee  
JOHN A. BLEECHER, } of  
W. C. ALEXANDER, } Assembly.  
WM. PIERSON, Jr.

## [A]

To the President and Directors of the New-Jersey Railroad and Transportation Company:

GENTLEMEN:—Agreeably to instructions, I hereby lay before you an estimate of the expense requisite for completing your railroad from the Hudson river to the Western termination, in the city of New-Brunswick. All the grading to be of sufficient width for two tracks, and one track to be laid complete with the requisite number of turnouts, sidings, car-houses, engine-houses, &c.

To complete filling dock at Jersey City, 105,000 cub. yds. at 28c. **\$29,400**

" Grading through Bergen Hill, 37,032 solid rock at \$2 **\$74,064**

" Grading through Bergen Hill, 1,000 solid rock at 70c. **700**

" Grading through Bergen Hill, 5,600 solid earth at 15c. **840**

" Grading through Bergen Hill, 19,400 solid earth at 10c. **1,940**

" Grading through Bergen Hill, 2,000 solid wall at 50c. **1,000**

" Grading through Bergen Hill, 30,000 embankment at 25c. **7,500 86,044**

" Embankment, sections 7 and 8, 18,000 cubic yds. at 33c. **5,940**

" Embankment, sections 8 to 13, 25,000 cubic yds. at 50c.	12,500	18,440	Transportation, balance to credit of this account, 59,004 23
" Grading sections 14 to 67 and completing bridges, Raritan bridge excepted,	45,000		Brunswick Bridge Stock, amount of purchase, 33,920 00
" Raritan viaduct masonry 3,227 cubic yds. at \$4.87 1/2,	15,932		Ground-Rent, balance to credit of this account, 674 16
" Raritan viaduct Superstructure. (Hassards contract),	23,600		Unpaid Dividends, 688 50
" Raritan viaduct Trussing and painting bridge,	10,000		New-Brunswick Bridge Co. balance tolls received, 615 68
" Raritan viaduct draws and sundries,	8,000	57,532	John P. Jackson, advanced for right of way, 298 25
			<b>\$1,379,282 95</b>

## Disbursements.

Construction of Road and Bridges,	860,335 35
Location, purchase of land and right of way,	222,606 42
Locomotive Engines, cost per account,	25,042 46
Cars, do.	38,105 72
Horses, do.	13,189 73
Wood, do.	7,185 31
Stocks of Hackensack and Passaic Bridge Comp..	113,759 19
Of Brunswick Bidge Company,	34,920 00
Of Newark Turnpike Company,	25,780 58
Of Essex and Middlesex Turnpike Company,	18,192 33
	<b>\$192,652 10</b>

The above I believe to be a full and sufficient estimate.

L. A. SYKES, Engineer.  
Newark, November 1st, 1836.

## [B]

Whole number of Passengers on the New-Jersey Railroad for the following 18 months, ending 1st December, 1836.

June, 1835,	11,809	Due from Hackensack and Passaic Bridge Comp., 11,210 78
July, "	18,222	Due from Newark Turnpike Company, 2,473 79
August, "	13,148	Do. Sundry Individuals, 3,587 64
September, "	14,196	Cash, balance in hand, 1,485 67
October, "	19,231	
November, "	13,609	
December, "	12,144	
January, 1836,	16,606	
February, "	9,270	
March, "	15,856	
April, "	24,694	
May, "	19,939	
June, "	21,244	
July, "	40,659	
August, "	34,332	
September, "	42,596	
October, "	34,829	
November, "	33,525	
		<b>\$18,757 68</b>
		Treasurer of School Fund Stock, 875 00
		Interest Account, 532 98
		<b>\$1,379,282 95</b>

The foregoing statement shows the gross amount of receipts and indebtedness of the Company, including capital stock, to be

**\$1,379,282 95**

From which deduct amount to credit of transportation account,

**59,004 22**

**\$1,320,278 73**

Of this sum there has been invested in the stocks of the Bridge and Turnpike Companies, which produce an income of 6 to 7 per cent. per annum, and which is not properly chargeable to expenditures on the road,

**\$192,652 10**

The cost of Locomotives now in use is,

**\$25,042 46**

The depreciation on which is estimated at

**2,000 00**

**23,042 46**

The cars now in use cost, And are estimated to be impaired,

**38,105 72**

**6,603 72**

**31,500 00**

## 395,918 Passengers

N. B. Of the above amount, 207,185 passengers have been transported over the road within the last six months, being  $\frac{1}{3}$  of the time embraced in the above statement.

## [C]

Summary Statement from the Balance-Sheet of the New-Jersey Railroad and Transportation Company, November 30, 1836.

## Receipts.

Capital Stock, amount actu-	
ally paid in,	\$1,125,000 00
Nevins, Townsend & Co.	
Cash advanced the Co.,	158,082 14

# ADVOCATE OF INTERNAL IMPROVEMENTS.

74

The horses on hand are estimated worth at least, 10,000 00  
The wood on hand is estimated at, 3,000 00  
Debts due the Company, including cash on hand, 18,757 88  
Besides which, if purchasing Lands for the location of the Road, more has been bought than will be required, and it is believed that the surplus Lands, after the right of way is completed, will sell (making allowance for some further expenditures on that account,) for at least, 100,000 00  
378,952 44  
\$941,325 29

It thus appears, that less than a million of dollars of the Capital has been applied to the location and construction of the Road, a very considerable portion of which has been expended upon the excavations at Bergen Hill, the embankments on the Newark meadows, and the Viaduct over the Raritan at Brunswick, none of which have been yet used for any purpose of profit or income.

The balance to the credit of Transportation account has principally accrued from the business of the Company since the 1st of May last, and furnishes the means, even in the present unfinished state of the work, to continue the dividends on the stock of 6 per cent. per annum; that account has been already charged with all the incidental expenses of Transportation, leaving a balance as is seen, of \$59,004 22

Still, with a view to greater precision, it may be proper to deduct from this sum the estimates of the Superintendent, (which he considers large,) for the depreciations of the Locomotives now in use, \$2,000 00  
Of the Cars, 7,605 72  
Of Horses, 3,189 73  
And for the consumption of Wood, 4,185 31  
15,980 76

Leaving a nett balance of profits from Transportation, of, \$43,023 46

The following are the amounts received for transportation of Passengers and Merchandise, from Sept. 15, 1834, (when the road was open,) to Dec. 1, 1836, from the Books of the Company.

From Sept. 15, 1834, to June 1, 1835, 8½ months, the *nett* receipts were, \$18,306 71  
From June 1, 1835, to Dec. 1, 1835, 6 months, the gross receipts were, 38,216 43  
From Dec. 1, 1835, to June 1, 1836, 6 months, the gross receipts were, 41,261 04  
From June 1, 1836, to Dec.

1, 1836, 6 months, the gross receipts were, 89,970 08  
J. WORTHINGTON, Treasurer.

[D]

Balance sheet from the books of the New-Jersey Railroad and Transportation Company, taken Nov. 30th, 1836.

## DEBITS.

### CONSTRUCTION ACCOUNT—

Amount of expenditures liquidated and paid,	\$727,050 16
Mason, Downing & Co., contractors on Bergen Hill, paid them,	52,342 39
Thomas Hassard, ditto on wood work of Brunswick Viaduct,	21,000 00
Bishop & Campbell, ditto mason work of do. do., Lawrence & Whitney, ditto for Cedar Ties on acc't., Engineering, salaries and expenses of engineer corps,	28,955 29 5,000 14 25,987 37
	\$860,335 35

LOCATION—Amount of expenditures liquidated and paid,

Wards Dock, paid for this property, not required for right of way,	199,582 11
Commercial Dock, do. do. do. do. do. do.,	2,625 00
First Baptist Church, paid on account this property at New-Brunswick,	13,750 00
James Crane, advanced to obtain right of way at E. Town,	6,327 50 321 81
	\$222,606 42

### LOCOMOTIVE ENGINES—

The amount paid for 3 now in use,	21,542 46
H. R. Dunham & Co. paid on account of a new one,	3,500 00

CARS—The amount paid for those in use,

John Stephenson, on account, additional cars	26,805 72
----------------------------------------------	-----------

HORSES—Amount paid for Horses,

Wood—Amount paid for wood (550 cords on hand,) \$13,189 73
------------------------------------------------------------

STOCK—Of the united Passaic and Hackensack Bridge Co., 877 shares purchased (123 remaining,) \$113,759 19
-----------------------------------------------------------------------------------------------------------

Of the Newark Turnpike Co., paid for 462 shares, (38 remaining.) 25,780 58
----------------------------------------------------------------------------

Essex and Middlesex do. do. 921 (79 do.,) 18,192 33
-----------------------------------------------------

New-Brunswick Bridge Co., cost 34,920 90
------------------------------------------

HACKENSACK AND PASSAIC BRIDGE Co.—Balance due from them for constructing a new bridge, less 9,910 78, Daniel Blasdell, paid him on account contract for covering do., 1,300 00  
11,210 78

Newark Turnpike Co., expended for repairing road, 2,473 79	
Lewis Condit, this amount due from him, 2,147 56	
Thomas Salter, do. do., 180 00	
Reserved Stock, ¼ of capital reserved by charter, 375,000 00	
Treasurer of School Fund, loss by agreement to guarantee 8 per cent. on stock, 873 00	
Interest Account, balance of this account, 532 98	
Estate of Z. Drake, balance due, 1,260 09	
Balance of cash on hand, 1,485 67	
	\$1,754,282 95

## CREDIT.

Capital Stock, whole amount of capital, \$1,500,000 00	
Nevens, Townsend & Co. this amount advanced by and through them, 158,082 14	
Bills Payable, sundry bonds given for New-Brunswick Bridge Co., stock, 34,920 00	
Transportation, balance of this account, 59,004 22	
John P. Jackson, do. due him, 298 25	
Ground Rent, do. of this account, 674 16	
First Dividend, unpaid 7 50	
Second do. do. 96 00	
Third do. do. 585 00	
New-Brunswick Bridge Co. balance of this account, \$615 98	
	\$1,754,282 95

[E]

Office of the New-Jersey Railroad and Transportation Company,

DECEMBER 12th, 1836.

The following resolutions were passed by the Board of Directors of the New-Jersey Railroad and Transportation Company, at their meeting, December, 12th, 1836.

*Resolved*, That as the decision of the Legislature of New-Jersey, upon the question of subscribing to one-fourth of the capital stock of this Company, reserved to the State by the charter is desirable, in order that this reserved stock may be made available to the company either by the subscription of the State or individuals; the Legislature be respectfully requested to decide the question as soon as practicable.

*Resolved*, That in case the State of New-Jersey will relinquish a portion of the stock of this company reserved by the charter, that this company will guarantee on a permanent subscription to stock to the amount of two hundred thousand dollars, dividends

the rate of *at least* five per cent. per annum; or on a permanent subscription of one hundred thousand dollars, dividends at the rate of *at least* six per cent. per annum, and such further and larger dividends as shall be declared by the company. And this Company will also agree that in case repayment of the monies received by New Jersey under the Deposite Act, shall be required by the General Government, this Company will retake from the State at par such an amount of the stock which may be subscribed as aforesaid, as will enable the State to repay to the General Government at such times as they may require repayment, a just proportion of the sum subscribed by the State for said stock.

I certify the foregoing to be a true extract from the minutes of the Board of Directors of the New-Jersey Railroad and Transportation Company.

JOHN P. JACKSON, Secretary of  
N. J. R. R. & T. Co.

The following Report from the pen of one of our most promising engineers, deserves a careful perusal. The importance of the work, completing as it does, one of the grand east and west chains of improvement is a sufficient argument, if any be needed, for the earnest consideration of the subject by every friend of internal improvement.

**REPORT ON THE SURVEY FOR A SHIP CANAL  
FROM RICHMOND TO WARWICK, BEING THE  
PLAN PROPOSED FOR THE CONNECTION OF  
THE JAMES RIVER AND KANAWHA IMPROVEMENT  
WITH TIDE WATER. BY Charles  
Ellet, Jr. C. E.**

RICHMOND, November 28th, 1836.

To the President and Directors of the James River and Kanawha Company.

GENTLEMEN.—In compliance with the resolution of your board of August 23d. "That the Chief Engineer be requested to take measures at as early a day as practicable, to have a survey and estimate made of the best possible plan of locking down from the old canal at some proper point in or near the city of Richmond, to tide water in James river, and the best plan to unite with the river and the dock, each plan being separate from the others, and report the survey, plans, &c. to the board," I herewith present my views on that subject, and the plan which I deem best adapted to the case. I have not attempted to comply with the full purport of the resolution, and furnish a separate map and estimate of each of the plans that might be adopted, since the time which could be devoted to this question is limited, and most of those plans are manifestly inadequate to the wants of the trade and the convenience of the city.

I have therefore restricted myself, for the present, to the determination of the best mode of connecting the work with tide water, and making the most suitable arrangement for the accommodation of the internal and foreign commerce of the port.

I am aware, that in offering my present plan in place of those which have been suggested at other times, as sufficient to satisfy the precise requirement of the law, I have

exceeded the object contemplated by the charter, and have perhaps transgressed the limit of the powers of the company; but whatever influence that consideration may have on the action of the board, I presume it should hardly prevent the development of a project which may possess sufficient importance to lead to a modification of the charter itself.

To open a communication between the canal and the river by either of the lines which I have pointed out for the purpose, is easily accomplished. There is no difficulty in placing the produce brought by the canal in tide water, or delivering it on the wharves of the dock; and if this were all that is required by the character and purposes of the work, the duty of forming this connection would be one of great simplicity. But the improvement in which you are engaged is designed to become the medium of intercommunication between foreign countries and the interior of our own; the line of transit of the imports, which coming from abroad, are to be distributed in the west, and of the products of the west which are intended for foreign markets. And in this effort it comes in competition with two lines on the north already in full operation, and of several others of almost equal pretensions, either contemplated or in progress of construction.

So that however fair may be the present prospects of the company in this field of enterprise, it becomes the friends of the improvement to enhance to the utmost the advantages which they possess, and overcome, as far as practicable, the impediments in the way of their success. Among the advantages of the line, one of the most conspicuous, is, perhaps, the possession of a valley highly favorable for the construction of the work, while among the obstacles to be mastered in the rivalry, is the comparative inconvenience of the navigation which leads to its outlet. And although this difficulty may appear to apply rather to the importer and the shipper than to the James and Kanawha Company, it is not to be doubted, that the character and standing of the work are directly interested in its removal.

Every ton of western produce, and every bale of goods which are brought to the city, are subject to a tax in the cost and risk of transportation, and in time in passing from the canal to the shipping, or from the vessels to the warehouses; and the cost of lighterage, though considerable in itself, is a small amount in comparison with the inconvenience and loss of having the business which needs the eye of the master, transacted by agents, at the distance of sixty miles from the city, and the risk of transportation, the delay of the vessel, and the inactivity of capital while the ship and cargo are detained in port. The company is affected by this loss. The risk is attended by an additional insurance, on the delay by an increase of freight; and these charges are a tax upon the trade, which, to the extent of its operation, places the work in a position unfavorable to an equal competition with its rivals.

It becomes necessary, therefore, in addition to the importance of opening a passage for the produce from the canal to the wharves, to remove as far as practicable, the expense of delivering it on shipboard; and

if this can be effected by a plan which will simultaneously reduce the other charges and risks to which it is exposed, and promote the prosperity of the city, which is the termination of the work, its claims on the consideration of the company will be proportionally enhanced. But until the inconvenience of transhipment is overcome, and the delay and cost of transporting the cargo of each vessel that is consigned to this port, to Warwick, or to City Point, are obviated, these conditions cannot be satisfied. And I am persuaded that no plan that leaves a space between the termination of the James River and Kanawha improvement and the shipping can be regarded as adequate to the commerce of the city or the wants of the trade of the interior; and that no termination should be received as admissible that does not bring the shipping up to the business part of the town, and enable us to lay the canal boats along side the vessels.

The plan I propose is designed to effect this object; and without discussing the merits of other projects, by which it is supposed such a connection might be accomplished, further than is necessary to show their inadequacy to the purpose, I will confine myself to the reasons which have prompted me to recommend the one before you, and to the facts which establish its sufficiency, and the profitability of the investment.

The condition of James river from Warwick to Harrison's bar is generally known. There is, I am informed, no point where the depth is less than 14 feet at common tides; and it is not unusual for ships of burthen to take in a part of their lading at Warwick and afterward drop down below Harrison's bar and make up their cargo. But owing to the difficulty of ascending the river to Warwick without the aid of steam, and the necessity of employing lighters after doing so, this is not a frequent practice; and it is more usually preferred to take in the whole cargo at City Point or Bermuda Hundred, than risk the chances of a precarious passage without gaining the advantage of relief from the inconveniences of the lower position. But if the navigation were good from Warwick to Richmond, and vessels could receive on the wharves that portion of their lading with which they can pass the bars, it is not to be questioned that the master of every vessel receiving her load at this port would be induced by such a condition of things to come up to the city. Although there is no sufficient reason to doubt the practicability of removing, or at least reducing the bars below Warwick, so that with proper arrangements above that place the whole lading might be taken on board at Richmond, it should be observed, that even in the event of those obstructions being found irremediable, but a very small portion of the whole trade of the place would have to be transported in lighters. Neglecting that part of the shipments which would continue to be made in sloops and schooners, as at present, a very considerable proportion of the foreign trade, (perhaps more than one half,) would be carried in brigs, or ships of less than four hundred tons burthen, which could pass over the bars fully loaded. Of the remaining half, perhaps four-fifths would be received on board at the city, and consequently only the remaining one-fifth of that part which

would be shipped in vessels of four hundred tons or more, or one-tenth of all that is carried in vessels too large to come up to the wharves at this time, need be transported below the bars in lighters. The reduction of the bars, however important in other respects, is not therefore essential to the success of a plan requiring a heavy expenditure for removing the obstructions near Richmond.

The survey of the river, recently made by order of Congress, will doubtless exhibit the character and formation of the bars below Warwick, and will perhaps detect the causes of their deposit; and, until the result of that examination is known, it will be premature to speculate on the cost of removing them. But, as the propriety of undertaking the improvement of the navigation above, does not depend on the success of the attempt that may be made below, we may consider the plan proper to be adopted for the latter, without reference to the former.

In the plan I now present for your consideration, it is not proposed to make use of the bed of the river, by attempting to remove the obstructions between Rocketts and Warwick. Independently of the cost of carrying into execution any plan for that purpose, I deem the success of such an experiment more than dubious. The bars which are deposited at the head of tide, are formed by the materials brought down by the streams from the interior of the country; and they consist, in fact, of the waste of the whole district drained by the tributaries of the river at the mouth of which the material subsides. This matter is loosened by the action of frost and moved by the rain—the heavier particles subsiding as the transporting power of the water diminishes, while the lighter are swept on and contribute to the formation of bars at the head of tide, and of deltas at the mouths of the streams. The deposit is greatest where the diminution of the fall of the river is most abrupt, and the resistance to the motion of the water is greatest; and, consequently, on approaching tide-water, where the transporting power of the river is suddenly neutralized, much of the matter which was forced along the bottom is left by the current, and of that which was held in suspension much is precipitated.

The wearing away of the upland is unceasing, and the process of transportation is not less constant; and no plan for improving the navigation at the points where the resistance of the material which is deposited is superior to the tidal force can be perfect which does not provide for the disposal of this matter.

The objection then to the project of a dam below the shoal water, and raising the surface from that point up to Richmond a sufficient height to float the shipping that can come to Warwick, is that instead of disposing of this material, we prepare still water to destroy the force of the current, and a basin to receive the sediment that is precipitated. We have not the necessary data to determine the time that would be required to fill this basin, so as again to interfere with the navigation of the pond. But, when we observe the great quantity of sediment that is discharged by the river at every freshet, and know that the deposit would chiefly occur above this dam, and that it would continue

to increase until the depth of the water would be reduced to the point where the transporting power would again become superior to the resistance, we shall appreciate the uncertainty of the expedient. The height to which the deposit would rise in the pond before the force of the current would be sufficient to carry the particles over the dam—the width of the water-way and all other things being constant—may be determined by the present condition of the bed of the river; for, the character of the deposit remaining the same, and the quantity of water being uniform, the area of the section, and consequently its depth must eventually acquire their present values.

To deepen the channel by actual excavation would be still less practicable. The rock below Rocketts might be removed; but the sand between it and Warwick presents a difficulty which could scarcely be overcome in that way. For, admitting the practicability of deepening the channel by excavating the sand to a sufficient depth over a space of three miles, it will hardly be contended that the benefit conferred on the city by such a labor, will be equivalent to the interest on the capital expended, and the additional cost of removing the annual deposit of the river.

To contract the water-way, and add to the depth of the channel by increasing the excavating power of the current, is a more rational suggestion: but, independently of the cost, there are serious objections against the adoption of the plan. The materials removed must be so distributed as to form no new obstruction to the navigation; to accomplish which, would require an extension of the works that will scarcely be justified by the object of the improvement.

Viewing then the insuperable objections against an attempt to improve the bed of the river sufficiently to subserve the purposes of the navigation, and the termination of the central improvement, I have been forced, in order to comply with the positive terms of the resolution under which I have acted, to seek other means of satisfying the conditions necessary to a proper connection of the work with tide-water.

For this purpose I propose building a dam, as represented on the accompanying plan, across the river below Mayo's bridge, and creating a pond deep enough to float ships of burthen from Shockoe creek to Haxall's mills: To construct a SHIP CANAL from this pond through the low grounds on the south side of James river to the deep water at Warwick: To make a dock, or harbor, separate from the pond, to receive the shipping and protect it from the floods, on the north side of the river, embracing about thirteen acres of ground above and below the abutment of Mayo's bridge.

Believing, confidently, that the depth of water on the bars below Warwick may be increased so that loaded ships may be brought to the termination of the canal, the plan and estimate are based on that assumption—unless they are intended to provide for that state of things. Therefore, as seventeen feet depth of water is required for a ship of 300 tons burden, of common mould, I have deemed that the least admissible depth that should be given to the canal. The width of the surface is assumed at 120 feet, and a

the bottom at 52 feet, which is amply sufficient for the passage of two such vessels. The length of the canal, from the end of the towing-path bridge across the pond, to the river lock above Warwick, is 4½ miles. The locks are 35 feet wide in the clear, and 155 feet long, between the gates.

The dam will raise the surface of the river 19½ feet above low water, and will itself be raised on an average 26 feet above the rock on which it is to be founded. Provision will be made, in building it, for drawing off the water and discharging the deposit which will accumulate in the bottom of the pond.

The plan does not contemplate the admission of steamboats, either into the basin above the dam or into the dock appropriated to the shipping. Independently of the danger to the vessels to be apprehended from the near approach of fire, it does not appear to me advisable to mingle the light trade in which they are engaged with the heavy business that would be transacted around the dock. It seems preferable to continue the steamboat landing at Rocketts, to repair the old dock from the pier up to Shockoe creek, for the use of vessels engaged in the coasting trade, and reserve the proposed dock above the creek for the reception of the shipping that is now found at Warwick, City Point and Bermuda Hundred. But although the heavy ships would be confined to the upper dock, and the pond above the dam, it is not proposed to exclude the small craft from them, or to prevent the canal boats from descending to the lower one, or to tide water. The plan recommended is designed to offer proper facilities to every part of the trade; a lock from one dock to the other (to be built over Shockoe creek and enable us to dispose of that nuisance,) will permit the passage of canal boats and small vessels, while a mole 80 feet wide around the upper dock will give ample space for the use of drays and teams, and for ships to discharge their cargoes or to receive their lading.

A capacious basin will be formed in the river by the reflux water from the dam, which will greatly increase the extent of wharfage and the accommodations for the shipping.

The bridge should be moved further up the stream, and rebuilt in a more substantial manner and at a greater elevation.

The islands in the river should be cut down to low water mark, and their materials transferred to the dam and the embankment of the dock.

The surface of the ship canal on the south side of the river will be about five and a half feet above that of the pond created by the dam, at ordinary water, and the surface of the water in the dock will be level with that in the pond. Double gates between the dock and pond will enable us to regulate the height of the former, and protect the shipping from the effect of freshets; and a sluice opening from the upper dock to the river below the dam will permit us to draw off the water whenever circumstances require it. The canal will be supplied by means of a feeder brought from a point a little above the dam, which at present furnishes the water power to the cotton factory and flour mills in Manchester.

It would be natural, on a first glance to,

suppose that great inconvenience might result from an unusual rise of water in the river, the velocity of the current tending to interfere with the navigation of the pond. But the plan which would be adopted for the purpose of towing vessels from the canal to the dock will preclude the possibility of accident, and operate more successfully during a freshet than in low water. The flood of last June would produce a velocity in the pond of but about fifteen inches per second, and a pressure upon the hull of the largest ship the work is designed to admit of about one ton. So that we have only to fasten the vessel by ropes capable of sustaining a tension of that amount to sleeves traversing guides on the superstructure of the bridge to secure the safety of the ship and obtain the assistance of the water in propelling her across the pond.

It is proper to remark, that this upper dock is not necessary to the success of the work; and that although it is included in the estimate for the purpose of showing the cost of the plan when complete, I should not think it advisable to construct the outer pier until the increase of trade shall render it expedient. Ships may lie in the eddy formed by the abutment of the dam and the shore, even during a freshet, in perfect security; and the cost of the work, exclusive of this item, is all that ought to be considered in testing the profitability of the investment.

#### ESTIMATE.

##### EXCAVATION, EMBANKMENT, &c., FOR THE SHIP CHANNEL.

535,000 cubic yards excavation, at 18 c.	96,300
383,000 cubic yards embankment, at 24 c.	91,920
26,000 cubic yards puddling, at 10 c.	2,600
1 culvert,	6,000
3 do. at \$2,000,	6,000

##### LOWER LOCK.

6,850 cubic yards masonry, at \$8 50	58,225
Gates and foundation,	6,600
Excavation for foundation and bailing,	15,000
	79,825

##### UPPER LOCK.

3,570 cubic yards masonry, at \$8 00	28,560
Gates and foundations,	5,690
	34,160
Dam across James river.	66,000
	\$382,805

135,000 cubic yards embankment, at 25 c.	33,759
45,500 cubic yards dry walling, at \$2 00,	91,000
Gates and hollow quoins, &c.,	2,700
Add for rebuilding Mayo's bridge,	40,000
	\$550,255

Total cost of connecting the canal with tide water,	\$550,255
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It has been observed that the cost of the outer mole should not be included in this estimate, being an expense which ought not to be incurred until the increase of business shall occur its construction.

It ought also to be added, that the plan herewith submitted, and to which the estimate applies, includes within the limits of the basin that portion of the old dock between the abutment of Mayo's bridge and Shockoe creek which is now covered with a deposit of mud brought down by that stream. But this ground is the property of another company, who may wish to appropriate the space to a different purpose; and I have therefore prepared an alternative plan, which will be less costly than the other, and will enable us to avoid interfering with the interests of the proprietors of that work

The above estimate amounts to 550,255  
Deducting the cost of the outer pier, &c. 58,000

Leaves, \$492,255

for the cost of the plan which would be offered in the event of objections being made by the owners of the dock against the appropriation of the ground to the purpose of the improvement.

There is still an important item in the cost of the work which has not yet been considered. The *damages to property* resulting from the destruction of water power, and the occupation of the low grounds on the south side of the river, will be considerable. And from the value of this property we are justified in drawing an argument in favor of the immediate prosecution of the enterprise. That the public will not always be content with the present mode of transacting the business connected with the commerce of the city, and that an improvement which will bring the shipping up to the wharves will eventually be forced into existence, must be admitted; and it becomes a question of importance whether the company shall go on and effect the connection of their work with tide water at an expenditure of perhaps a hundred thousand dollars, and increase, by their arrangements, the value of all the property in the neighborhood of the termination of their line, and afterward construct the work now proposed, at an additional expense due to the cost of the previous improvements and the augmented value of the property which will be injured: or, whether they shall mark out and publish their plan at once, and acquire a right to the ground which their works will occupy before the alternative improvement shall have given it a value which it does not now possess and which they will in the end have to pay for.

With regard to the property injured—it consists entirely of the low grounds between Manchester and Warwick, the island, and the lots and manufacturing establishments on the north side of the river and west of Mayo's bridge. The cotton factory and other establishments using water power on the south side of the river can be perfectly protected at a cost of fifteen thousand dollars, and will be somewhat improved by an addition of three feet head of water on their wheels.

It is not easy to estimate the damage to

which Mr. Haxall and the few other proprietors around him will be entitled, since these damages will consist of the difference between the present value of their property and that which it will bear after the construction of the work—facts which cannot be obtained until the consummation of the improvement shall have furnished data for an estimate. But by observing that though the company will have to pay largely for the possession of this property, the most valuable part of it—the flour mills—is so situated as to be admirably adapted for warehouses, having the canal on one side, and a depth of water sufficient to float a loaded ship on the other—that the machinery will be valuable in new situations, and that the water power destroyed by the dam must be obtained from the canal, we will perceive that the actual loss will be greatly reduced.

I feel neither capable nor at liberty to estimate the present value of the property that will be occupied or injured by the erection of the dam; and we should probably find it still more difficult to fix, in anticipation, the price it will command after the construction of the work shall have concentrated the most important part of the trade of the city on the borders of the basin. We might perhaps form a fair estimate by referring to similar situations around the docks of other commercial cities; but as such an indication could only be received as evidence by those who have yielded their confidence to the enterprise, it could not be expected to govern altogether, the proprietors. I think it would, therefore, be more expedient for the company, after embarking in the undertaking, to obtain possession of the property, either by negotiation or assessment, and themselves risk the consequences of the work. I doubt not that there are those who would value highly such an investment.

I have estimated the cost of preserving the establishments in Manchester at

15,000

To which add the estimated cost, 550,255

And we have for the capital required for the construction of the work, without including the liquidation of the probable assessments, \$565,255

It remains to be seen how far the actual commerce of the city will justify such an expenditure; though it is well to note that a portion of this expense, which I am not prepared to estimate, would have to be incurred by a compliance with the clause of the charter requiring the company to connect their work with tide water, by whatever plan might be adopted for that purpose, and is not therefore strictly to be compensated for by the tolls on the ship canal.

It is not my intention in determining that portion of the present charges on the commerce of Richmond which might be transferred to tolls on the proposed improvement, to endeavor to sum up all the articles that are registered at the custom house, or attempt a nearer approach to accuracy than can be obtained by making a fair estimate of the heaviest articles of trade. It will be sufficient to attend to the coal and to the tobacco, flour, salt, iron and dry goods, which are



streams passed are bordered by swamps, or low grounds, which required long bridges elevated on sustaining posts and framed timbers. All these bridges remain uncovered, except the one across the Blackwater, and of course their decay will be rapid, and very costly repairs will soon be necessary. After passing the Meherrin, the route is quite undulating, and generally ascending to where it crosses the Petersburg railway, less than two miles from the southern termination of the latter, at Blakely on the Roanoke.

I took my seat in the train at Suffolk, for the intersection near the Roanoke, there to take the Petersburg train, as the shortest way to reach the latter town. And circuitous as is the whole route thus passed over, I travelled the 118 miles from Suffolk to Petersburg in 9 hours—including all the stoppages, except one, of half an hour, between leaving the Portsmouth train and the arrival of the one from Petersburg. If the two companies would agree in their hours of arrival and departure, so as to permit such a journey always on stated days, (as might be done without inconvenience,) and the arrangement was made known, there would be many persons who would come by the two railways from Norfolk to Petersburg, rather than wait one, and sometimes two days, for a passage by the steamboats.

Both these two great railways cross the Meherrin and Nottoway rivers below their falls, and the Portsmouth road also crosses the Blackwater river—and this last, and that only below the railway, is alone made any use of for navigation to bring country produce to be put on the railway, for market. And it is probable that no such use would have been made of the Blackwater, for boats bringing crops made in the neighborhood, but for their being shown the way, by this being made a regular steamboat route from Edenton, and by which much cotton is brought from North Carolina, to be sent by the railway to Norfolk. The almost total disuse of these three easily navigated rivers, is one of the most remarkable instances of the inveteracy of long established habits in our countrymen, and the slowness with which they adopt improved facilities, when offered to their acceptance. These three rivers, though small, flow over very level beds, and would require but little labor and expense to be made navigable for flat boats for distances which combined, would make at least 120 miles, without including the Chowan, formed by the junction of the Meherrin and Nottoway, which is now used for navigation. The length of the Meherrin, from the lowest falls to where it unites with the Nottoway, to form the Chowan, is more than 50 miles, as measured on the map. The Nottoway, from the lower falls above the Petersburg railway, to the point of junction just named, is more than 40 miles—and the Blackwater from the southern line of Surry county, to where that river joins the Nottoway, is 30 miles.

From above the Petersburg railway, there are no falls or rocks, in either the Meherrin or Nottoway—nor, indeed, any obstruction to downward navigation, except trees fallen by accident, or more gen-

erally by design, into the streams, and which, if sawed into pieces at low water, would all be swept away, together with the rafts and sand bars which they have served to form, by the first freshet. It is true, that these streams are very low in summer droughts: but the crops of the country (cotton and corn,) are seldom ready for market before the streams are full—and the timber which this navigation would bring into use, and make valuable for market, might wait until the water was sufficiently deep for its transportation. The Nottoway lands are among the most productive in the counties of Sussex and Southampton—and its passing through the heaviest producing region, is another reason why this river should be used for navigation.—But because these waters led to no suitable market before, and because every farmer has always been in the habit of sending his crops to market by his carts or wagon, no one thinks, yet, of taking the far cheaper way of boats to either of the railways.—Meherrin and Nottoway might doubtless be profitably improved and navigated far above their falls, as routes to the upper railway: but it would be idle to urge that, while the advantages offered by their far better waters below the falls are overlooked, and almost totally neglected.

It has been a long time since the attention of the writer of these remarks was attracted to the peculiar circumstances of these waters, and the advantages that might be derived from bringing them into use. To induce others more interested, and having more local information, to think upon that and other kindred subjects, the subjoined "Hints and Queries," were published in 1825; which may now furnish some amusement, if nothing more, by the strong contrast displayed of the condition of things, and of prospects, then and now. If the reader, at this time, should condemn the scheme then proposed for bringing these natural canals into use, as altogether absurd, and ridiculous, (as it certainly would have been, if the present state of improvement could have been anticipated,) let it be remembered, that at that time no one had thought of constructing railroads in this region—nor establishing the now prosperous cotton and other factories, which will be so increased in time, as to require as much of the water of the Appomattox, as then ran in waste down the falls. For these two great improvements, the country owes much to the enterprising spirit of Petersburg—and to the fortunate results of these bold but judicious adventures, Petersburg owes her present and fast growing prosperity, which stand in such marked contrast to the state of decline which seemed progressive as late as when this piece was published. But the writer was not more in the dark then, as to the near approaching revival of the prosperity of Petersburg, from the railway and the factories then not planned, than he was in supposing that furnishing a proper outlet to the three rivers would bring them into use. They have now better outlets than he then supposed possible to obtain—being intersected, in five different places, by railroads furnishing speedy and cheap conveyance

to two different market towns: and yet these rivers are almost as little used now, as before the construction of these great works.

### Miscellaneous.

From Ure's Philosophy of Manufactures.

#### GENERAL VIEW OF MANUFACTURING INDUSTRY.

(Continued.)

The astonishing expedition with which a great Cotton Factory, comprehending spinning and weaving, can be erected in Lancashire, arises from the vast collections of patterns of every variety, from those of gigantic steam-engines, water-wheels, iron-girders, and joists, down to the smallest member of a throng or loom, in possession of the engineers, millwrights, and machine-makers. In the course of last year, Mr. Fairbairn equipped water-wheels equivalent to 700 horses' power, and steam-engines to 400 horses' power, from his engineer factory alone, independent of his millwright, and steam-boiler establishment. Hence, whenever capital comes forward to take advantage of an improved demand for goods, the means of fructifying it are provided with such rapidity, that it may realize its own amount in profit, ere an analogous factory could be set a-going in France, Belgium, or Germany.

The facilities resulting from the employment of self-acting tools have not only improved the accuracy, and accelerated the construction of the machinery of a mill, but have also lowered its cost and increased its mobility, in a remarkable degree. At present, a throng frame made in the best manner may be had complete at the rate of 9s. 6d. per spindle; and a self-actor at about 8s. per spindle, including the patent licence for the latter. The spindles in cotton factories move with so little friction that one horse power drives 500 on the fine hand-mule, 300 on the self-actor mule, and 180 on the throng; which power includes all the subsidiary preparation machines, as carding, roving, &c. A power of three horses is adequate to drive 30 large looms with their dressing machine.

The fine bobbin and fly-roving frame, is now so greatly improved, that it can do a certain part of the work formerly done by the stretching mule; and performs as much for 9s. as the other did for 50s.

The dressing machine does at present 200 pieces of thirty yards each in a week, = 6000 yards, and costs in wages to the dressers 50s. This branch of the trade having in consequence of the high wages been, like the mule spinning, continually disturbed by unions and strikes, has led to the invention of a self-acting machine which will dress at least 6000 yards of warp in two days, under the superintendence of a laborer at 3s. a-day; that is, at a cost in wages of 6s. This mechanism is at the same time greatly simpler and cheaper than the former, and will soon come into general use for coarse calicoes. It affords an instructive warning to workmen to beware of strikes, by proving how surely science, at the call of capital, will defeat every unjustifiable union which the laborers may form.

It is one of the most important truths resulting from the analysis of manufacturing industry, that unions are conspiracies of workmen against the interests of their own order, and never fail to end in the suicide of the body corporate which forms them; an event the more speedy, the more coercive or the better organized the union is. The very name of union makes capital resistive, and puts ingenuity on the alert to defeat its objects. When the stream of labor is suffered to glide on quietly within its banks, all goes well; when forcibly dammed up, it becomes unprofitably stagnant for a time, and then brings on a disastrous inundation. Were it not for unions, the vicissitudes of employment, and the substitution of automatic for hand work, would seldom be so abrupt as to distress the operative.\*

Some may imagine that the present work, which purposes to give a minute analysis and description of the several processes of manufacture, may prove injurious to the trade of this country, by putting foreigners in possession of much useful knowledge, now hardly within their reach. To this I reply, that knowledge is available just in proportion to the capacity and means of the persons who acquire it. Every invention and improvement relative to cotton fabrics is primarily attracted to Manchester as the surest and most productive scene of its development, where it can be most profitable to the inventor, because most profitable to the trade concentrated there. Lancashire is the fertile and well-labored soil in which the seed of factory knowledge will bring forth fruit one hundred fold, whereas abroad it can yield little more than a tenfold return. However well informed the mill proprietors of Great Britain may be, and they unquestionably may bear a comparison in talent as in wealth with the landed aristocracy in any part of the world, still they may profit extremely by the methodical study of the elements of their prosperity. Many of the machines at present employed by them involve the most elegant applications of both physical and mechanical science; such indeed as if duly studied would enable them to understand the operative part of their business as clearly as the commercial, and thus protect them from those hazardous innovations which crafty projectors are perpetually pressing upon their adoption. Prodigious sums are wastefully expended every year by gentlemen manufacturers in this way, which would be saved by a more thorough acquaintance with those principles of science and art which I shall endeavor to expound.

Several individuals who have embarked vast fortunes in factories are to a very great extent the victims at least, if not the dupes, of scheming managers, who are ever ready to display their perverse ingenuity by the substitution of some intricate trap, for a simpler but less showy mechanism. I have known not a few cases, where a complete system of good machines, capable of doing excellent work, has been capriciously turned out of a cotton factory and replaced by

another of greater expense, but of less productive powers, and less suited to the style of work, than the old one if skilfully managed. These substitutions are continual in many establishments. They interfere most essentially, and often unnecessarily, with the going of the mill, and are referrible almost always to injudicious choice at first, and capricious alterations afterwards,—circumstances over which the proprietor, from ignorance of the structure of a good machine, cannot always venture to exercise the proper control. There are no doubt many mill-managers perfectly fitted by judgment, knowledge, and integrity to second the sound commercial views of the mill-owner, and to advance the business with a profitable career. These practical men form the soul of our factory system. But with a wrong-headed, plausible manager, the proprietor is sure to be led such a mechanical dance as will bewilder him completely, unless he has acquired a clear insight into the *arcana* of the business by deliberate study of the composition and performance of each machine in his factory. It may be supposed that this species of education can be most easily acquired in the midst of the machinery itself. But this is a mistake which experience speedily proves.

There exists in most cotton-spinning factories a beautiful piece of mechanism called the bobbin and fly frame, regulated by a principle of self-acting equations, which would do honor to the genius of Brunel. In venturing to affirm that very few mill-owners understand the structure of this machine, I do not draw the inference presumptuously from the difficulty which I myself encountered in comprehending the automatic adjustments of its parts; but from meeting with several masters of the Manchester mills who were incompetent to explain the train of its motions, however obligingly they undertook the task. In fact one scientific gentleman, a complete master of that mechanism and of every other used in the trade, who kindly acted on many occasions as Mentor in my factory researches, assured me that his father, a very talented cotton-spinner, as the country well knows, never can retain a clear comprehension of certain differential adjustments in the above machine for a week after it has been explained to him. Some of its movements being necessarily inclosed, and of a curious nature, can be best studied in an analytical drawing, where the whole concatenated motions are brought at once under the student's eye. Such complex mechanisms, indeed, like the topography of an irregular city, are most readily comprehended by inspection of a plan, in which the mutual bearings and connexions of the parts are analytically shown. The representations which I shall have the honor of presenting to the public were made by a talented draughtsman, who accompanied and lived with me in the factory districts, and they were submitted to some of the most eminent engineers and machine-makers of Manchester, from whom they received unqualified praise for accuracy as well as elegance of execution.

I shall conclude this general view by stating, that the moving power, besides performing its proper factory tasks of carding, roving, spinning, weaving, &c., does a vast deal of miscellaneous drudgery. It raises the coals from their bin in the boiler-yard by a sloping series of buckets, like those of a dredging machine for deepening rivers, and delivers them on an elevated railway platform into a waggon—through the drop-bottom of which they are duly distributed among the range of hoppers attached to Stanley's ingenious furnace-feeding machines, and are thereby strewn into the fires in proportion to the demand for steam to work or warm the mill. In this way the fire-man is entirely freed from muscular effort, so that he can tend with ease many great steam-boilers, and is not liable through ignorance or negligence to mismanage the heat, or dissipate the fuel in such black clouds as lower over a London brewery. It is no uncommon thing in Manchester to see engine-boilers equivalent to the force of from 200 to 300 horses generating their steam without any sensible smoke.

But there is another office more truly menial assigned to the engine, that of transporting any of the work-people upwards or downwards to any floor of the factory, to which their business may call them at any time, and this with equal celerity and safety. To ascend and descend rapidly through several flights of stairs is no trifling source of fatigue, as domestic servants in some fashionable houses well know. Masters of mills, with the twofold motive of benevolence and economy, have long ago taken measures to supersede this painful exertion, by the construction of moveable platforms, inclosed in upright 150 lbs. English, was completely exhausted in ascending, by steps, sixty-five feet in thirty-two seconds. The full work of a man is obtained by his going up stairs at the rate of forty-five feet in one minute.—A man weighing 160 lbs. can ascend by stairs three feet per second for a space of fifteen or twenty seconds; and if he be supposed going up stairs for a day, he actually raises 450 lbs. to the height of 3281 feet; or 1,476,450 lbs. one foot high. If the day be reckoned at ten hours, or 600 minutes, he will raise 2460 lbs. one foot high in a minute, which is only one-thirteenth of Watt's estimate of a horse's power=32000 lbs. raised one foot high per minute. With a winch a man does, according to Coulomb, only five-eights as much work as in going up stairs. If the above observations be nearly correct, they prove the expenditure of power in ascending stairs to be great. Coulomb says that this mode of action is the most advantageous for the muscular force of man, though he rates its amount at little more than one-half of Smeaton's estimate of an English laborer's force.

The mechanism of the teagle will be understood by the following description and drawing taken from one of the most improved forms made by Frost of Derby, who in concert with the late William Strutt, Esq., had the merit of inventing this very elegant automatic machine.

The tea le (tackle?) or hoist, consists of three principle parts.

\* The full discussion of this topic belongs to Book III.

1. The perpendicular shaft or pit, having a horizontal section, of about five or six feet square, placed in the most convenient part of the building, and extending from the ground-floor to the top story.

2. The ascending and descending plat-tunnels placed in convenient parts of their many-stored buildings. This apparatus is called a hoist or a teagle, and is usually of such size and stability, as to allow half a dozen of persons, old and young, to travel at once from any one floor to any other.—The motion is perfectly smooth and agreeable, as I have often experienced; and is so entirely under control, as to cease at any desired instant opposite to any of the issue-doors in the side of the tunnel.

The muscular force expended in mounting stairs was made the subject of experiment by M. Coulomb. Amontons had previously found that an active man, weighing form, suspended by ropes from pulleys, and moved up and down by machinery. It is a strong frame-work of timber, about six feet high, boxed up on three sides with deals, leaving the front side open, in correspondence with a series of doors on the several floors of the factory. The power required for hoisting is moderated by over-balancing the platform with two counter-weights, together about a hundred weight heavier than itself, which ascend and descend equally with the descent and ascent of the platform; and which, as well as the platform, are suspended by ropes from the opposite sides of the shaft to secure a steady vertical motion. Two large planks are fixed upright upon the opposite walls of the shaft, as guides to the platform, and two smaller ones as guides to the counter-weights, the latter being sunk groovewise into the building.

3. The third part of the teagle is the machinery capable of being set in train with the moving power.

I shall give first a popular explanation of the principle on which the hoist operates.

Every observant visiter of a factory must have noticed that the endless strap or belt which descends from the drifting shaft to the steam pulley on the end of a carding, spinning, or weaving organ, sometimes has its two pieces running parallel to each other, as in that view, and sometimes has them crossed over each other.—The first arrangement, called the open strap, communicates motion in the one direction, while the other arrangement communicates motion in the opposite direction. Suppose now, that there is a fast pulley on the axis of any machine, and close to it, on either side, a similar pulley loose on the same axis; of which one is driven by an open strap, and the other by a crossed or close one. If the one strap be shifted upon the fast pulley, it will drive the machine in one direction, but if the other strap be shifted upon it, it will drive the machine in the opposite direction; that is, the machine according as it is driven by the open or close strap may be made to work upwards or downwards at pleasure, as in raising or lowering weights, &c.

When both belts are shifted upon the loose pulleys, the machine has no hold or

the load, and would therefore allow it to fall by the influence of gravity, were there not some restraining power. This restraint is exercised by a *brake*, which presses strongly on the circumference of a wheel in train with the machinery, and fixes the whole by a force of friction proportional to the weight acting on the brake. Now, to move the load up or down, the brake must be removed at the same instant that the appropriate strap is shifted upon the fast pulley of the machine. The same contrivance which replaces the strap on the loose pulley, replaces the pressure of the brake on the friction-wheel.

Before describing minutely the structure of the hoist, it is proper to mention that all movements produced by straps ought to be pretty rapid, since, when slow, they are apt to permit a slipping of the bands on the surface of the driving-drums or pulleys. As, therefore, in this way, the pulley-shaft of the teagle would require too great a speed, for being connected directly with the hoisting rope, it transfers its motion, by means of a pinion and a wheel, to a second shaft, which travels at such a rate as to cause the platform to rise or fall through two feet in the second.

The drawings and description of the teagle are omitted, as being foreign to the general tenor of the article.

M. Chaix, a Frenchman who has been long a resident in the Isle of France, has discovered a simple and ingenious mode of preventing the formation of the crust which is generally found inside the boilers of steam-engines, and which, being formed principally of calcareous substances, prevents the transmission of heat from the furnace to the water. An experiment has been made on board the *Phare* steamer at Toulon, by order of the Minister of Marine, and was perfectly successful, showing that the process not only prevents new concretions, but even detaches and destroys a formed crusts.

Mme. Cheron was murdered at Maisons on the 14th of January, 1834. Two students having by some means obtained possession of her skull, fancied it indicated a remarkably avaricious disposition; and, in order to satisfy themselves whether their judgment was correct, submitted it to the examination of the celebrated phrenologist, Dr. Leroy, who fully confirmed their conclusions. A man who had managed her affairs for 20 years, and a physician who had long been intimate with her, were written to, and their answers established the scientific decision of it the Doctor by the evidence of facts showing that the deceased would acquire money *per fas et nefas*, and, though enjoying a revenue of about 6000 francs per annum, would live in the most miserable manner. Upon this, Dr. Leroy sent a detailed report to the Phrenological Society, which was read at a full meeting. The *Messager*, on the 28th August last, published the report, and mixed up the analysis of the cranium of Mme. Cueron with those of Lacenaire, Fieschi, and Avril. Upon this, the surviving relatives of Mme. Cheron brought a prosecution for defamation against Dr. Leroy and the *Messager*. The

trial came on yesterday before the Tribunal of Correctional Police, when, after a long hearing, the Doctor and the Editor of the *Messager* were acquitted.

It has been impossible to form any calculation approaching to correctness of the amount of the population of Paris previous to the 15th century. Under Philip le Bel it was said to be 50,000. Under Louis XI., after the expulsion of the English, it was 150,000. In the middle of the 16th century it rose to 200,000 or 220,000. At the beginning of 1590, although reduced by the wars of religion, it was reckoned that there were 200,000. It, however, resumed its progressive increase under Henry IV. and Louis XIII. In the latter part of the reign of Louis XIV., and the first of the Regency, it amounted to very nearly 510,000. In 1762 it reached 576,000. In 1755 there were 71,114 families liable to taxes. In the reign of Louis XVI., Paris contained 600,000 inhabitants. In 1805 the number was 547,750; in 1817 it came to 713,966; in 1827 to 890,431; in 1831 to 774,338; and in 1832 to 770,286.—We are now assured that, according to a recent census, the population of this city amounts to about one million, and, consequently, has nearly doubled in the course of 31 years.—[French paper.]

**COPPER SMOKE.**—Attached to the new copper works belonging to Messrs. Vigors & Co., in Owm Avon, is a tunnel for consuming and conveying copper smoke 1100 yards in length, viz: from the smelting furnaces to the top of the high hill towards the north-west, called Mol-y-Mynyddan.—In this elevated spot the small quantity, if any, that will escape precipitation, will find its way into the air. Few persons, probably, are aware of the immense quantity of copper thus saved to the proprietor, which in former times was deposited on the neighboring lands, subjecting him to most expensive actions. In a tunnel not long made by Messrs. Williams & Co., in their works on the Swansea river, 200 tons of copper were taken out, which had been precipitated in the short space of one year—the value of this was 2000*l.*, and much was still left in the tunnel. Chambers are made in the tunnel for attracting the smoke, which is further promoted by the use of steam, so that little of it is allowed to reach the place of exit till it has deposited in *transitu* all its substance. This material, therefore, which not only was formerly lost, but did serious mischief to the adjoining lands, thereby entailing lawsuits of ruinous expense, becomes now a matter of profit.

[Merthyr paper.]

In the course of September, a gold watch and other articles, given by Napoleon to the Abbe Buonavita, who was his chaplain at Saint Helena, were sold by auction at the Isle of France. The watch with its chain went for 755 piastres, a silver tea pot for 100 piastres, a sugar dish for 140, a silver goblet for 131, a pair of salt-cellars for 55, a small gold goblet for 253, a silver fork and spoon for 75, and another fork and spoon for 80, a pair of sugar-tongs for 105, a knife for 30, and the case in which the

above articles were inclosed for 30 piastres, making a total of 1,756 piastres, or 9,500 francs. The purchaser of the watch, which Napoleon wore at the battle of Austerlitz, afterwards refused a very considerable sum for his bargain.

**PREPARATION OF EXTRACTS.**—The usual mode of obtaining vegetable extracts is by the aid of *heat*, but it is well known that the medicinal properties of compounds are often essentially altered by changes of temperature, and that the proximate principles of plants on which the virtue of extracts depends, may therefore be subverted at the high temperature at which they are sometimes obtained.

Mr. Guillard proposes to avoid the risk of such a deterioration, by pounding the fresh plant in a mortar, pressing out the juice in the cold, and evaporating it by a current of air from a smith's bellows. In this way he has perfectly succeeded in procuring the extract of *Aconitum Napellus*, after pounding, pressing and filtering, when the temperature of the laboratory did not exceed 10° to 13° cent.

A more perfect mode, perhaps, would be to evaporate by means of a vacuum, without heat, by which the agency of the atmospheric oxygen would be very much avoided, as well as that of increased temperature.—[*Idem.*]

**A Good Beginning.**—Mr. Charles Park has sent to the Patent Office a duplicate model of his "Patent Worming and Rope Serving Machine." This is an example worthy of all imitation. In acknowledging the receipt of the model, the superintendent of the Patent Office says :

"To you belongs the merit of having been first to aid thus in the restoration of the Patent Office, and I trust that the example, which you have given to the Patentees, with so much promptitude, will be extensively followed."

A valuable mine of copper has recently been discovered in the forest of Troncay, in the Nievre, and a company is being formed for the purpose of working it.

The *Journal de Rouen* observes, that the rapid extension of the silk manufacture in England must have a serious effect upon that of France. The exportation of silk from England during the last year exceeded that of the former by the amount of 8,000,000 francs. This is said to have arisen from the employment of steam mechanical looms, of which there are 1,700 in England, and of these 306 are in use in Manchester. By means of these looms, two women are now able to produce as much manufactured silk as six men could formerly without them.—The economy of labor, adds the journal, renders the English formidable opponents to the French in the foreign markets.

We hear that the Board of Health of Paris is about to verify by experiments, on a large scale, the extraction of tallow by water, mixed with sulphuric acid, in one of the abattoirs, and particularly the quality of the tallow, resulting from this new process, which has been so successfully employed by a tallow-melter at Rouen. If

this new mode should be approved, an important advantage will result in the salubrity of the melting-houses, and a greater still to the tallow trade.

At a recent meeting of the Warwickshire Society of Natural History and Archaeology, Professor Buckland stated that he had discovered at Guy's Cliff the remains of an extinct species of animal, which had never before been found or mentioned by geologists, and that the Castle, Collegiate Church, and town of Warwick, were built upon a stratum utterly unknown to English geologists. Another discovery which he had made was, that the town of Leamington rested on the remains of animals which had existed in other times.—[*Warwick Herald.*]

**NEW MANUFACTORIES.**—It will be gratifying to all who take an interest in the welfare of Poughkeepsie, to hear that new and important branches of business, are, one after another, being established here, to contribute to the growth and prosperity of the town. Among the several new branches which have been commenced during the few last months, we are pleased to notice Mr. Hurlbert's Manufactory of Paper Hangings, which already manufactures about *one thousand pieces* of paper hangings per week.—A cursory examination of his papers, has impressed us with the belief, that for good taste in the patterns and getting up, as well as for skill in mixing the colors, and beauty and excellence in the finish, they will be found fully equal to the French papers, which have hitherto greatly excelled all others.

The Manufacture of Carpets, is another new business just commenced. One establishment is already partially in operation, another will commence operations in a few weeks. We have seen the first piece of superfine ingrain carpeting ever woven in Poughkeepsie. It is from the manufactory of Messrs. D. L. Starr & Co. The piece contains one hundred yards, and is of such an excellent quality as readily to pass for an important carpet. This establishment as well as the one getting up by Messrs. Delafield & Whinfield, is expected to be in full operation by the month of May. The two concerns will give employment to about 50 men, and manufacture more than \$100,000 worth of carpeting annually.

In addition to the above, Mr. Raymond has just put in operation a concern for spinning stocking yarn, which turns out about 50 lbs. of yarn per day.—[*Poughkeepsie Journal.*]

**NEW MODE OF PREPARING KERM'S MINERAL AND THE GOLDEN SULPHUR OF ANTIMONY.**—By M. MUSCULUS. For the golden sulphur of antimony, I take—

Lime slackened with a sufficient quantity of water,	6 parts.
Sub. carbonate of potash, or dry subcarbonate of soda,	4
Finely pulverized sulphuret of antimony,	2
Flower of sulphur,	1
Sand, well washed and dried,	8

Mix them all well together, and put them in a funnel or other separating vessel, with a few small pebbles or coarse bits of glass underneath, and cover the mixture with a layer of sand. Pour on this by degrees, cold water, until the filtered liquid is no longer precipitated by hydrochloric acid.

The liquid thus obtained is to be sufficiently diluted with pure water and treated with hydrochloric acid. The precipitate, or golden sulphur of antimony, is to be carefully washed, and dried in the common way.—The product is about equal to the sulphuret of antimony employed.

To prepare Kerm's mineral, proceed in the same manner, only leaving out the flower of sulphur. The liquid obtained is to be treated with a solution of bicarbonate of soda; or by passing through it a current of carbonic acid gas.

This method of preparing these two substances, by displacement, is new, and much more simple and economical, in time, and expense, than the usual mode, and the products are as fine and abundant. The proportions may not perhaps be so rigorously exact as further experience may dictate.—It is possible that a previous maceration may be useful.

**Note by M. Boullay.**—We have repeated the process of M. Musculus, and find that the golden sulphuret of antimony, which it yields, is very beautiful—the kermes is heavy and the color not very good, but by substituting the dry carbonate of soda for potash, and adding to the filtered fluid an equal volume of pure water, deprived of air by heat, prior to the precipitation, we have obtained the kermes in great abundance, light, and of fine bright color.

Thus the preparation of kermes, till now so embarrassing and capricious, will be extremely easy to practice, in small quantities as well as large, and the pharmacist will be no longer excusable in depending on commerce, now he can extract the kermes by simple lixiviation, in the cold, instead of long and reiterated ebullition.—[*Journal de Pharm.*]

**PRESERVATION OF CANTHARIDES.**—The rapidity with which mites attack cantharides, and the fact that they devour the soft parts of the flies, which are the most active, render any mode of effectual preservation very useful.

An experience of ten years enables me to affirm, that the process of Appert will thoroughly preserve them. The bottles containing the dried and sifted flies, being thoroughly corked, and fastened with double pack thread, are to be placed upright in a kettle of water, which is to be heated to ebullition and kept boiling, for half an hour, the bottle remaining until the water gets cold. They may then be put away in any cool place. If the insects are pulverized on being first taken from the drying stove, again left in the stove for a few hours previous to their being bottled, and afterwards treated as above, they will be still more effectually preserved. The eggs of the mites which adhere to the cantharides, though they may escape the heat of the stove, are destroyed by the boiling temperature, in well closed bottles.—[*Idem.*]

## Advertisements.

## FRAME BRIDGES.

THE undersigned, General Agent of Col. S. H. LONG, to build Bridges, or vend the right to others to build, on his Patent Plan, would respectfully inform Railroad and Bridge Corporations, that he is prepared to make contracts to build, and furnish all materials for superstructures of the kind, in any part of the United States, (Maryland excepted.)

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawamisong river on the Military road, in Maine. On the national road in Illinois, at sundry points. On the Baltimore and Susquehanna Railroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contoocook river at Henniker, N. H. Across the Souhegan river, at Milford, N. H. Across the Connecticut river, at Haverhill, N. H. Across the Contoocook river, at Hancock, N. H. Across the Androscoggin river, at Turner Centre, Maine. Across the Kennebec river, at Waterville, Maine. Across the Genesee river, at Squakiehill, Mount Morris, New-York. Across the White River, at Hartford, Vt. Across the Connecticut River, at Lebanon, N. H. Across the mouth of the Broken Straw Creek, Penn. Across the mouth of the Cataragus Creek, N. Y. A Railroad Bridge diagonally across the Erie, Canal, in the City of Rochester, N. Y. A Railroad Bridge at Upper Still Water, Orono, Maine. This Bridge is 500 feet in length; one of the spans is over 200 feet. It is probably the FIRMEST WOODEN BRIDGE ever built in America.

Notwithstanding his present engagements to build between twenty and thirty Railroad Bridges, and several common bridges, several of which are now in progress of construction, the subscriber will promptly attend to business of the kind to much greater extent and on liberal terms.

MOSES LONG.

Rochester, Jan. 13th, 1837.

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## NEW ARRANGEMENT.

ROPE FOR INCLINED PLANES OF RAILROADS.

WE the subscribers having formed a co-partnership under the style and firm of Folger & Coleman, for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S. Durfee & Co., will be done by the new firm, the same superintendent and machinery are employed by the new firm that were employed by S. S. Durfee & Co. All orders will be promptly attended to, and ropes will be shipped to any port in the United States.

12th month, 12th, 1836. Hudson, Columbia County State of New-York.

ROBT. C. FOLGER,  
GEORGE COLEMAN,

## HARVEY'S PATENT RAILROAD SPIKES.

THE Subscribers are manufacturing and are now prepared to make contracts for the supply of the above article. Samples may be seen and obtained at Messrs. BOORMAN, JOHNSON, AYRES & Co No. 119 Greenwich Street, New-York, or at the Makers in Poughkeepsie, who refer to the subjoined certificates in relation to the article.

HARVEY &amp; KNIGHT.

POUGHKEEPSIE, October 25th, 1836.

The undersigned having attentively examined HARVEY'S PATENT FLANCED and GROOVED SPIKES is of the opinion, that they are decidedly preferable for Railroads to any other Spike with which he is acquainted; and shall毫不犹豫地 recommend their adoption by the different Railroad Companies whose works he has in charge.

BENJ. WRIGHT,  
Chief Engineer N. Y. & E. R. R.  
NEW-YORK, April 4th, 1836.

Harvey's Flanced and Grooved Spikes are evidently superior for Railroads to those in common use, and I shall recommend their adoption on the roads under my charge if their increased cost over the latter is not greater than some twenty per cent.

JNO. M. FESSENDON, Engineer.  
BOSTON, April 20th, 1836.

No. 1-6t.

STEPHENSON,  
Builder of a superior style of Passenger  
Cars for Railroads.

No. 264 Elizabeth street, near Bleeker street,  
New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlem Railroad now in operation.

J25t

AMES' CELEBRATED SHOVELS,  
SPADES, &c.

300 dozens Ames' superior back-strap Shovels  
150 do do plain do  
150 do do caststeel Shovels & Spades  
150 do do Gold-mining Shovels  
100 do do plated Spades  
50 do do socket Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES &amp; CO.

No. 2 Liberty street, New-York.

BACKUS, AMES &amp; CO.

No. 8 State street, Albany

N. B.—Also furnished to order, Shapes of every description, made from Salisbury refined Iron 4t—if

AN ELEGANT STEAM ENGINE  
AND BOILERS, FOR SALE.

THE Steam Engine and Boilers, belonging to the STEAMBOAT HELEN, and now in the Novelty yard, N. Y. Consisting of one Horizontal high pressure Engine, (but may be made to condense with little additional expense) 36 inches diameter, 10 feet stroke, with latest improved Piston Valves, and Metallic packing throughout.

Also, four Tubular Boilers, constructed on the English Locomotive plan, containing a fire surface of over 600 feet in each, or 2500 feet in all—will be sold cheap. All communications addressed (post paid) to the subscriber, will meet with due attention

HENRY BURDEN.

Troy Iron Works, Nov. 15, 1836.

## ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)

NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

H. R. DUNHAM &amp; CO.

4-vtf

ALBANY EAGLE AIR FURNACE AND  
MACHINE SHOP.

WILLIAM V. MANY manufactures to order, IRON CASTINGS for Gearing Mills and Factories of every description

ALSO—Steam Engines and Railroad Castings of every description.

The collection of Patterns for Machinery, is not equalled in the United States.

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A SPLENDID OPPORTUNITY TO  
MAKE A FORTUNE.

THE Subscriber having obtained Letters Patent, from the Government of France, granting him the exclusive privilege of manufacturing Horse Shoes, by his newly invented machines, now offers the same for sale on terms which cannot fail to make an independent fortune to any enterprising gentlemen wishing to embark in the same.

The machines are in constant operation at the Troy Iron and Nail Factory, and all that is necessary to satisfy the most incredulous, that it is the most VALUABLE PATENT, ever obtained, either in this or any other country, is to witness the operation which is open for inspection to all during working hours.

All letters addressed to the subscriber (post paid) will receive due attention.

Troy Iron Works, HENRY BURDEN.

N. B. Horse Shoes of all sizes will be kept constantly for sale by the principal Iron and Hard-ware Merchants, in the United States, at a small advance above the price of Horse Shoe Iron in Bar. All persons selling the same, are AUTHORISED TO WARRANT EVERY SHOE, made from the BEST REFINED IRON, and any failing to render the MOST PERFECT SATISFACTION, both as regards workmanship and quality of iron, will be received back, and the price of the same refunded.

H. BURDEN. 47-4t

PATENT RAILROAD, SHIP AND  
BOAT SPIKES.

The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.

Troy, N. Y., July, 1831.

Spikes are kept for sale, at factory prices, by L. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janvier, Baltimore; Degrade & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes.

(123am) H. BURDEN.

RAILWAY IRON, LOCOMOTIVES, &amp;c.

THE subscribers offer the following articles for sale.

Railway Iron, flat bars, with countersunk holes and mitred joints,

	lbs.
350 tons 2t by 4t, 15 ft in length, weighing 4 <sup>63</sup> / <sub>100</sub> per ft.	4 <sup>63</sup> / <sub>100</sub>
200 " 2 " 4t, " " " 3 <sup>50</sup> / <sub>100</sub> "	3 <sup>50</sup> / <sub>100</sub>
70 " 1 <sup>1</sup> / <sub>2 " 4t, " " " 2<sup>1</sup>/<sub>2</sub></sub>	2 <sup>1</sup> / <sub>2</sub>
80 " 1 <sup>1</sup> / <sub>2 " 4t, " " " 1<sup>25</sup>/<sub>100</sub></sub>	1 <sup>25</sup> / <sub>100</sub>
90 " 1 " 4t, " " " 1 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz. 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2t, 3t, 3t, 3t, 3t, and 3t inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

India Rubber Rope for Inclined Planes, made from New Zealand flax.

Also Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and ston block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

Mr. Solomon W. Roberts, a highly respectable American Engineer, resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron &c. ordered through us.

A. &amp; G. RALSTON.

Philadelphia, No. 4, South Front st.

MACHINE WORKS OF ROGERS, KETCHUM AND GROSVENOR, Paterson, New-Jersey. The undersigned receive orders for the following articles, manufactured by them, of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

## RAILROAD WORK.

Locomotive Steam-Engines and Tenders; Driving and other Locomotive Wheels, Axles, Springs and Flange Tires; Car Wheels of cast iron, from a variety of patterns, and Chills; Car Wheels of cast iron, with wrought Tires; Axles of best American refined iron; Springs; Boxes and Bolts for Cars.

COTTON WOOL AND FLAX MACHINERY.

Of all descriptions and of the most improved Patterns, Style and Workmanship.

Mill Geering and Millwright work generally; Hydraulic and other Presses; Press Screws; Calenders; Lathes and Tools of all kinds, Iron and Brass Castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, Patterson, New-Jersey, or 60 Wall street, N. Y.

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